Message

From: Matt Tonkin [matt@sspa.com]
Sent: 1/9/2018 7:58:39 PM
To: Whittier, Robert [Robert.Whittier@doh.hawaii.gov]; TU, LYNDSEY [Tu.Lyndsey@epa.gov]; Ichinotsubo, Lene K [lene.ichinotsubo@doh.hawaii.gov]
CC: Grange, Gabrielle Fenix [Gabrielle.Grange@doh.hawaii.gov]; Takaba, Richard R [richard.takaba@doh.hawaii.gov]; roxanne.kwan@doh.hawaii.gov; joanna.seto@doh.hawaii.gov
Subject: RE: Notes from12/20/17 Webex

Bob:

I am not sure I was on the recipient list for this email. Fenix forwarded it Sunday (You likely wondered why I didn't reply!).

Thanks for sending this along. The EVS files are very helpful, we do use EVS quite a bit, the 4DIMs were helpful and my colleague was able to open the underlying files also in EVS.

We could discuss the pumping data tomorrow in the regulator pre-meeting, if that's ok.

I will express my agreement with you in regard your discussion item #3 below, regarding water levels. As you may have noted on the call, this is a particular area of concern for me also, based on prior experience at many sites and particularly those in fractured (secondary porosity) settings. Clearly this is a complex site, with some wide-reaching effects from pumping at times, and some spatially-varying responses of groundwater to recharge. Some of that information does seem to be in the measured water level data, and potentially discernible to some degree, which is why my notes mention this and identify methods worth considering (principally, convolution) to further evaluate those data. A related concern then is that the combination of the geologic heterogeneity, combined pumping/recharge effects and distribution of water level data may render developing a high confidence in predicted (mapped or modeled) migration directions difficult. To the extent that it is difficult or uncertain, for me the question is what's the appropriate way to accommodate or evaluate that. So, while agree with all parties on the calls and in meetings that emphasis should be placed less on absolute "heads" and more on gradients, I am concerned those gradients may be difficult to discern.

I look forward to meeting everyone tomorrow.

Matthew J. Tonkin
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From: Whittier, Robert [mailto:Robert.Whittier@doh.hawaii.gov]
Sent: Tuesday, January 2, 2018 1:35 PM
To: TU, LYNDSEY <Tu.Lyndsey@epa.gov>; Ichinotsubo, Lene K <lene.ichinotsubo@doh.hawaii.gov>
Cc: Grange, Gabrielle Fenix <Gabrielle.Grange@doh.hawaii.gov>; Takaba, Richard R <richard.takaba@doh.hawaii.gov>; roxanne.kwan@doh.hawaii.gov; joanna.seto@doh.hawaii.gov
Subject: Re: Notes from12/20/17 Webex

Hi Matt and All,

Looking over the data request:

- If it is the geologic logs that are desired, those for RHMW01,02, 03, 04 are in a data set that I uploaded to the Dropbox earlier.
- Attached is geologic description of the Red Hill Shaft
- I uploaded some EVS types files to the dropbox that have various shape files imbedded including one of the Red Hill Shaft. Idon't have access to EVS so can't capitalize on all of the data contained in the folder
- I do have monthly pumping data for wells in the model domain. However, it will take some formatting

Here is a discussion item for our conference call when ever it happens. The spreadsheet serves a couple of purposes:

1. The attached is an example of some of the data I am using aid in my understanding of the Red Hill groundwater flow. Included in this data set are:
    1. Water levels measured during the monthly oil-water interface measurements;
    2. water levels measured during the quarterly groundwater sampling;
    3. monthly precipitation data; and
    4. Red Hill Shaft pumping data.
2. There are other data sets I can pass along if you feel they would be helpful
3. In this spreadsheet, the TOC elevations are updated to the survey that was included the GW Modeling Working Group Slides so these should be pretty much final.
    1. These data seem to show that the groundwater elevation in the wells running down the axis of the tank farm are higher than that to the northwest (with the exception RHMW07, which is an anamoly and HDMW2253-03 that has a 1000+ open hole over which the water level is integrated over), and the south east.
    2. The data also seem to show that there is essentially no difference in water table elevation going down the axis of the tank farm down to and including RHMW05. This seems to define a a groundwater contour rather than a groundwater flow line.
    3. In the Modeling Working Group Meeting a lot of attention was paid to spatial interpolations of regional groundwater elevation data. Regional interpolations remove critical detail that is needed to understand the groundwater elevations and potential gradients that in the area of concern, i.e. the Moanalua/Red Hill/Halawa area. The currently available groundwater elevation and groundwater chemistry do not clearly support either mauka to makai groundwater flow CSM or the Honolulu to Pearl Harbor groundwater flow CSM. Some real good data analysis needs to be done resolve what the real groundwater flow direction is. Or we could do a really good tracer test.

Thanks,

Bob W>

From: TU, LYNDSEY <Tu.Lyndsey@epa.gov>
Sent: Friday, December 22, 2017 5:49:58 AM
To: Ichinotsubo, Lene K
Cc: Whittier, Robert; Grange, Gabrielle Fenix; Takaba, Richard R; Kwan, Roxanne S; Seto, Joanna L
Subject: RE: Notes from12/20/17 Webex

Works for me, I will work to schedule something brief for the morning on the 4th or 5th with EPA, DOH and Matt Tonkin. Bob and Fenix, please let me know if you have scheduling needs for times on either of those days.

Happy Holidays!

Lyndsey Tu
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From: Ichinotsubo, Lene K [mailto:lene.ichinotsubo@doh.hawaii.gov]
Sent: Thursday, December 21, 2017 4:56 PM
To: TU, LYNDSEY <Tu.Lyndsey@epa.gov>
Cc: Whittier, Robert <Robert.Whittier@doh.hawaii.gov>; Grange, Gabrielle Fenix <Gabrielle.Grange@doh.hawaii.gov>; Takaba, Richard R <richard.takaba@doh.hawaii.gov>; roxanne.kwan@doh.hawaii.gov; joanna.seto@doh.hawaii.gov
Subject: RE: Notes from12/20/17 Webex

Lyndsey,

Can we take a pass for next week? The first week in January might be better. I assume mornings (HST) will be better for Matt, so how's about January 4 or 5? I will not be available, but I believe both Bob and Fenix will be.

lene

From: TU, LYNDSEY [mailto:Tu.Lyndsey@epa.gov]
Sent: Thursday, December 21, 2017 10:17 AM
To: Ichinotsubo, Lene K <lene.ichinotsubo@doh.hawaii.gov>
Cc: Whittier, Robert <Robert.Whittier@doh.hawaii.gov>
Subject: FW: Notes from12/20/17 Webex

Lene,

Matt's notes from the meeting yesterday. Bob W. was copied. Will anyone at DOH be around next week if we want to have a quick follow up call with Matt? Or is after the new year better? My schedule is flexible.

Thanks

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From: Matt Tonkin [mailto:matt@sspa.com]
Sent: Thursday, December 21, 2017 8:59 AM
To: Linder, Steven <Linder.Steven@epa.gov>; Pallarino, Bob <Pallarino.Bob@epa.gov>; TU, LYNDSEY <Tu.Lyndsey@epa.gov>; Robert.Whittier@doh.hawaii.gov
Cc: Ronald Chinn <ron.chinn@innovex.net>
Subject: Notes from12/20/17 Webex

Please find attached some roughly-processed notes I prepared from the meeting yesterday. They are not production/memorandum-type quality. From my perspective, the major topics that were discussed that I believe we should discuss before the January meeting, are as follows:

1. Processing of water level data for temporal trends. The approach used, and results.
2. Weighting of observations for the model calibration.
3. Use and representation of hydraulic gradients in the calibration.
4. Preparation and application of the water level maps (using kriging).
5. Review of developing groundwater model design and structure.

None of these are time-critical, but I do think we should internally discuss them. In particular, I think there is more information in the water level data than is being inferred at this stage, because of the methods being used. I believe that other methods may be more revealing and may provide more information both on trends and on recharge effects.

Would you like to have a call next week, or do you prefer to wait until the New Year? I will be working through much of the holidays, with sporadic days/periods off.

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